clarion

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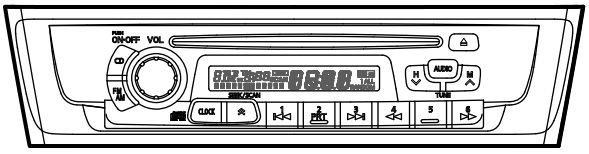
Service Manual



NISSAN Automobile Genuine
AM/FM Radio CD Stereo

Model PN-2165M-A
(Genuine No. 28185 5M000)
(ID No. CY018 / Black Escutcheon)

Model PN-2165M-B
(Genuine No. 28185 5M010)
(ID No. CY038 / Brown Escutcheon)

Model PN-2165M-C
(Genuine No. 28185 5M020)
(ID No. CY068 / Gray Escutcheon)

■SPECIFICATIONS

Radio section

Tuning system:	PLL Frequency synthesizer system	
Receive range:	AM	530kHz to 1,710kHz
	FM	87.9MHz to 107.9MHz
Intermediate frequency:		
	AM	450±3kHz
	FM	10.7±0.2MHz
Quieting sensitivity:	AM	Less than 32dBμ(at 20dB S/N)
	FM	Less than 10dBμ(at 30dB S/N)
Separation:	FM	More than 20dB(at 1kHz)
Auto tuning stop sensitivity:		
	AM	36±6dBμ
	FM	25±6dBμ

CD section

Disc:	12cm,8cm Disc
Frequency response:	17Hz to 20kHz(±3dB)
Separation:	More than 50dB(1kHz,0.5W)
S/N ratio:	More than 74dB(1kHz,5W)
Distortion:	Less than 0.4%(1kHz,0.5W)

General

Output power:	30W×4
Power supply voltage:	DC14.4V(10.8V to 15.6V)
	Negative ground
Back-up consumption:	Less than 3mA
Dimensions(mm):	264.2(W)×63.6(H)×171.9(D)
Weight:	1.7kg

※ Specifications and design are subject to change without notice for further improvement.

■COMPONENT

PN-2165M-A / PN-2165M-B / PN-2165M-C

Main unit ––––– 1

■NOTE

We cannot supply PWB with component parts in principle. When a circuit on PWB has failure , please repair it by component parts base. Parts which are not mentioned in service manual are not supplied.

■ To engineers in charge of repair or inspection of our products.

Before repair or inspection, make sure to follow the instructions so that customers and Engineers in charge of repair or inspection can avoid suffering any risk or injury.

1. Use specified parts.
   The system uses parts with special safety features against fire and voltage. Use only parts with equivalent characteristics when replacing them.
   The use of unspecified parts shall be regarded as remodeling for which we shall not be liable. The onus of product liability (PL) shall not be our responsibility in cases where an accident or failure is as a result of unspecified parts being used.
2. Place the parts and wiring back in their original positions after replacement or re-wiring.
   For proper circuit construction, use of insulation tubes, bonding, gaps to PWB, etc, is involved. The wiring connection and routing to the PWB are specially planned using clamps to keep away from heated and high voltage parts. Ensure that they are placed back in their original positions after repair or inspection.
   If extended damage is caused due to negligence during repair, the legal responsibility shall be with the repairing company.
3. Check for safety after repair.
   Check that the screws, parts and wires are put back securely in their original position after repair. Ensure for safety reasons there is no possibility of secondary ploblems around the repaired spots.
   If extended damage is caused due to negligence of repair, the legal responsibility shall be with the repairing company.
4. Caution in removal and making wiring connection to the parts for the automobile.
   Disconnect the battery terminal after turning the ignition key off. If wrong wiring connections are made with the battery connected, a short circuit and/or fire may occur.
   If extensive damage is caused due to negligence of repair, the legal responsibility shall be with the repairing company.
5. Cautions regarding chips.
   Do not reuse removed chips even when no abnormality is observed in their appearance. Always replace them with new ones. (The chip parts include resistors, capacitors, diodes, transistors, etc). The negative pole of tantalum capacitors is highly susceptible to heat, so use special care when replacing them and check the operation afterwards.
6. Cautions in handling flexible PWB
   Before working with a soldering iron, make sure that the iron tip temperature is around 270℃. Take care not to apply the iron tip repeatedly(more than three times)to the same patterns. Also take care not to apply the tip with force.
7. Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.
8. Cautions in checking that the optical pickup lights up.
   The laser is focused on the disc reflection surface through the lens of the optical pickup. When checking that the laser optical diode lights up, keep your eyes more than 30cms away from the lens. Prolonged viewing of the laser within 30cms may damage your eyesight.
9. Cautions in handling the optical pickup
   The laser diode of the optical pickup can be damaged by electrostatic charge caused by your clothes and body. Make sure to avoid electrostatic charges on your clothes or body, or discharge static electricity before handling the optical pickup.

9-1. Laser diode
   The laser diode terminals are shorted for transportation in order to prevent electrostatic damage. After replacement, open the shorted circuit. When removing the pickup from the mechanism, short the terminals by soldering them to prevent this damage.

9-2. Actuator
   The actuator has a powerful magnetic circuit. If a magnetic material is put close to it. its characteristics will change. Ensure that no foreign substances enter through the ventilation slots in the cover.

9-3. Cleaning the lens
   Dust on the optical lens affects performance. To clean the lens, apply a small amount of isopropylalcohol to lens paper and wipe the lens gently.

■ FEATURES

		PN-2165M-A	PN-2165M-B	PN-2165M-C
NISSAN PART NO.		28185 5M000	28185 5M010	28185 5M020
ID NO.		CY018	CY038	CY068
RADIO	*BAND*	AM/FM	AM/FM	AM/FM
	AUTO TUNING	SEEK/SCAN	SEEK/SCAN	SEEK/SCAN
	FM DIVERSITY	—	—	—
	AM N.C.	—	—	—
	GLASS ANT.	—	—	—
INTERFACE	*AUX CONNECTION*	◎	◎	◎
	REMOTE CONTROL	—	—	—
	PHONE CONNECTION	—	—	—
	CD A/C CONNECTION	—	—	—
OTHERS	*ESCUTCHEON*	BLACK	BROWN	GRAY
	ILLUMINATION COLOR	WHITE	WHITE	WHITE
	POWER AMP	30W×4	30W×4	30W×4
	DIMMER	◎	◎	◎
	CLOCK	◎	◎	◎
	EQ	◎	◎	◎
	AMP ON SIG	◎	◎	◎

■ADJUSTMENT

Item	Procedure	Measuring instrument
Clock accuracy adjustment	1. Make the unit test mode as follows: Turn the ACC switch on and off 4 times while pressing the POWER button and the EJECT button.(The version number of the microcomputer is displayed, and the beep signal sounds.) 2. Adjust TC301 so that the reading of CLK TP(pin44 of IC301) is 0±0.1sec. (When the ACC switch is turned off, test mode is canceled.)	Universal timer

■EXPLANATION OF IC

■ LC72366-9531 052-1160-00 CD and Tuner Controller

1. Terminal Description

pin 1 : X IN : IN : 4.5MHz crystal connection.
pin 2 : TEST 2 : IN : Open or connect to ground.
pin 3 : RF MUTE : O : IF control signal output. "H"= SEEK.
pin 4 : ST_/TW_/SD : O : AM : Output "L" ,when received 900kHz.
FM : "L"= Stereo ON.
AM/FM SEEK : Station detect signal input.
pin 5 : CHU SW_ : IN : "L"= Disc chucked.
pin 6 : CW : O : Loading motor control output. Ref. Table 1.
pin 7 : CCW : O : Loading motor control output. Ref. Table 1.
pin 8 : TR C : IN : Photo sensor signal input from the CD mechanism.
pin 9 : TR B : IN : Photo sensor signal input from the CD mechanism.
pin 10 : TR A : IN : Photo sensor signal input from the CD mechanism.
pin 11 : CD 3 : I/O : Data communication line with TC9432.
pin 12 : CD 2 : I/O : Data communication line with TC9432.
pin 13 : CD 1 : I/O : Data communication line with TC9432.
pin 14 : CD 0 : I/O : Data communication line with TC9432.
pin 15 : CD CK : O : Clock pulse output to TC9432.
pin 16 : CD CE_ : O : Chip enable signal output to TC9432. Negative logic.
pin 17 : CD RESET_ : O : Reset pulse output to TC9432. Negative logic.
pin 18 : NU : O : Not in use.
pin 19 : KS 0 : O : Key scan output. Ref. Table 2.
pin 20 : KS 1 : O : Key scan output. Ref. Table 2.
pin 21 : KS 2 : O : Key scan output. Ref. Table 2.
pin 22 : KS 3 : O : Key scan output. Ref. Table 2.
pin 23 : NU : O : Not in use.
pin 24 : NU : O : Not in use.
pin 25 : NU : O : Not in use.
pin 26 : NU : O : Not in use.
pin 27 : KR 0 : IN : Key scan input. Ref. Table 2.
pin 28 : KR 1 : IN : Key scan input. Ref. Table 2.
pin 29 : KR 2 : IN : Key scan input. Ref. Table 2.
pin 30 : KR 3 : IN : Key scan input. Ref. Table 2.
pin 31 : VDD : - : Positive supply voltage.
pin 32 : EJECT SW_ : IN : CD eject key signal input. Negative logic.
pin 33 : LCD DATA : O : Serial data output to LCD driver (LC75822).
pin 34 : LCD CLCK : O : Serial clock output to LCD driver (LC75822).
pin 35 : LCD CE : O : Chip enable signal output to LCD driver (LC75822).
pin 36 : LCD INH_ : O : Inhibit signal output to LCD driver (LC75822). Negative logic.
pin 37 : SYS ON : O : Power supply control signal output.
pin 38 : NU : O : Not in use.
pin 39 : NU : O : Not in use.
pin 40 : NU : O : Not in use.
pin 41 : RADIO ON : O : "H"= Radio ON.
pin 42 : LCD ON_ : O : "L"= LCD back light ON.
pin 43 : NU : O : Not in use.
pin 44 : BEEP : O : Beep out(3.75kHz).
pin 45 : VOL 1 : IN : Volume control pulse input from the rotary switch.
pin 46 : VOL 2 : IN : Volume control pulse input from the rotary switch.
pin 47 : POWER SW_ : IN : Power switch pulse input. Negative logic.
pin 48 : AMP ON : O : "H"= Power amplifier ON.
pin 49 : COMBI ON : O : "H"= Combi ON.
pin 50 : AUX ON_ : IN : "L"= AUX ON.
pin 51 : VOL CE : O : Chip enable signal output to the Volume IC (LC75386).
pin 52 : VOL CLK : O : Clock pulse output to the Volume IC (LC75386).
pin 53 : VOL DATA : O : Serial data output to the Volume IC (LC75386).
pin 54 : VOL MUTE_ : O : Mute signal output to the Volume IC (LC75386). Negative logic.
pin 55 : SUB SYNC : IN : Sub code block signal input.
pin 56 : NU : O : Not in use.
pin 57 : FM ON_ : O : FM ON flag output. Negative logic.
pin 58 : AM ON_ : O : AM ON flag output. Negative logic.
pin 59 : CD ON_ : O : "L"= CD ON.
pin 60 : AF MUTE_ : O : "L"= Audio mute ON.
pin 61 : NU : IN : Not in use.
pin 62 : NU : IN : Not in use.
pin 63 : NU : IN : Not in use.
pin 64 : NU : IN : Not in use.
pin 65 : CLOCK INH : IN : "L"= Clock display ON.
pin 66 : EJECT INH : IN : "L"= with the dual stage eject.
pin 67 : HOLD_ : IN : ACC ON detect terminal. Negative logic.
pin 68 : SNS : IN : Voltage sensor terminal.
pin 69 : AM IF : IN : AM IF signal input.
pin 70 : FM IF : IN : FM IF signal input.
pin 71 : NU : O : Not in use.
pin 72 : NU : O : Not in use.
pin 73 : VDD : O : Positive supply voltage.
pin 74 : AM OSC : IN : AM VCO signal input.
pin 75 : FM OSC : IN : FM VCO signal input.
pin 76 : GND : - : Ground.
pin 77 : NU : O : Not in use.
pin 78 : EO 1 : O : PLL error out.
pin 79 : TEST 1 : - : Not in use.
pin 80 : X OUT : O : 4.5MHz crystal connection.

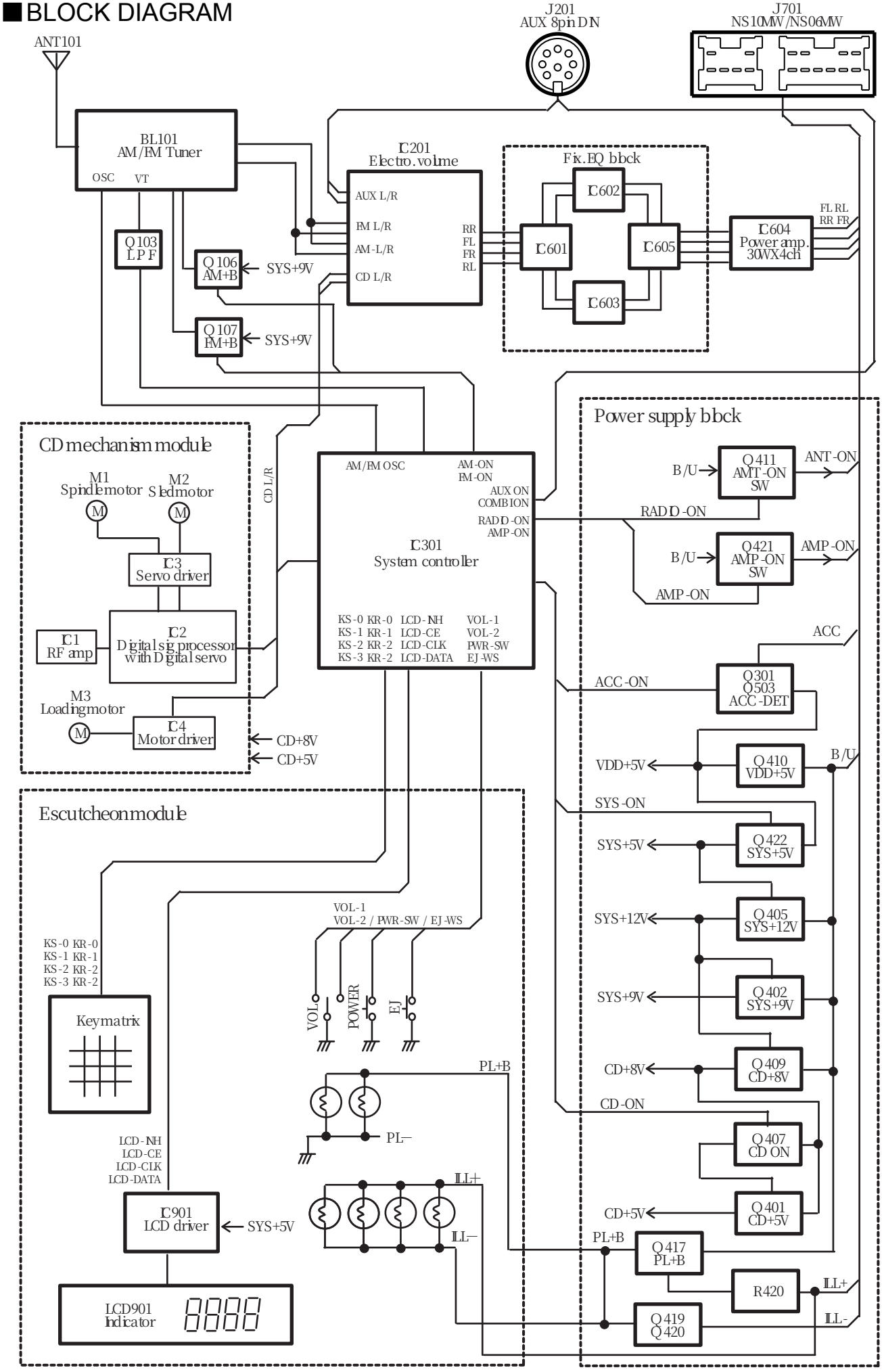
Table 1. Loading motor control output

	Loading	Eject	Brake	Stop
CW (pin 6)	H	L	H	L
CCW (pin 7)	L	H	H	L

Table 2. Key matrix

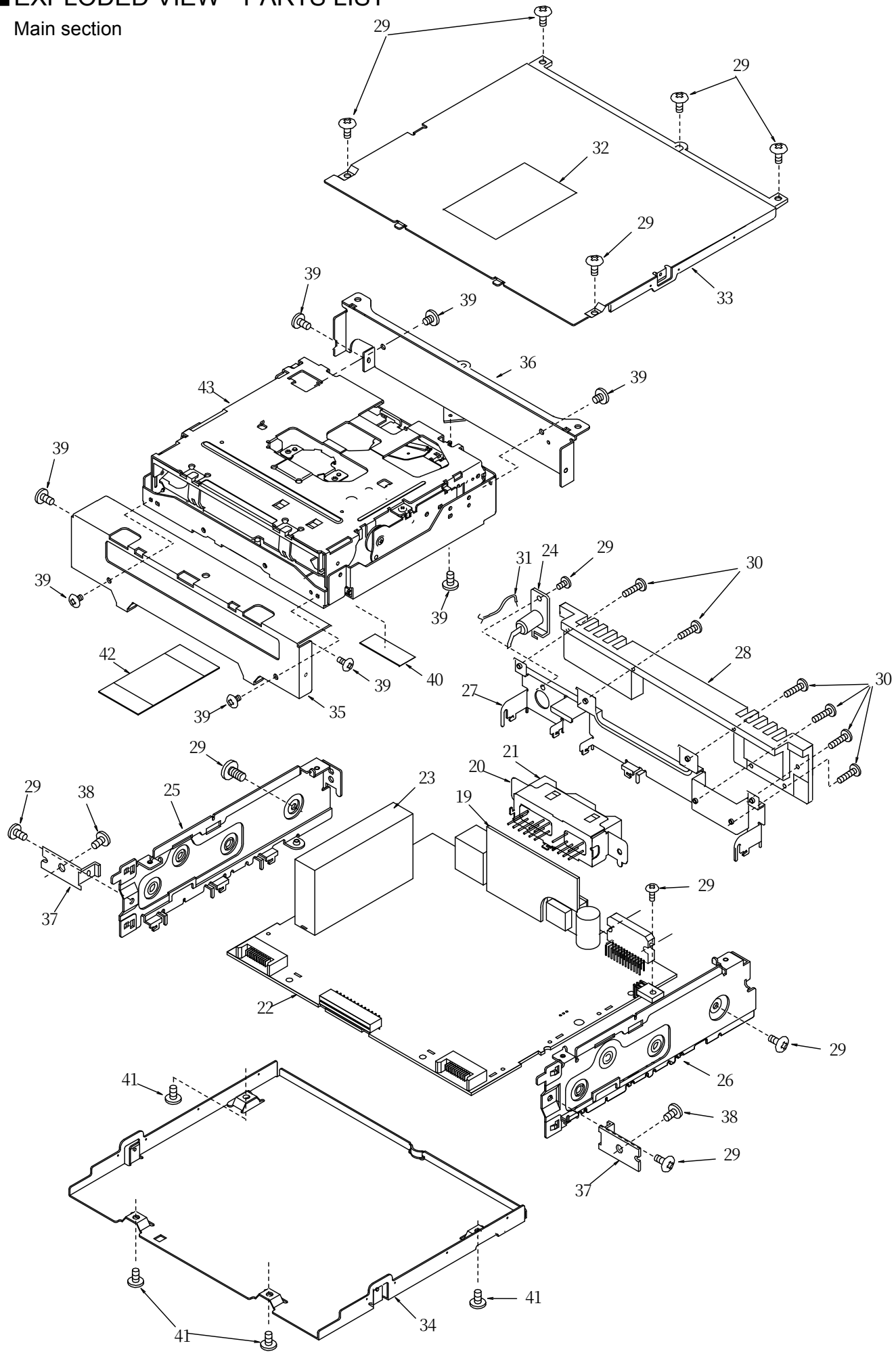
	KR 0 (pin27)	KR 1 (pin28)	KR 2 (pin29)	KR 3 (pin30)
KS 0 (pin19)	FM/AM	CD		
KS 1 (pin20)	M 1 APS-REW	M 2 RPT	M 3 APS-FF	AUDIO
KS 2 (pin21)	M 4 REW	M 5	M 6 FF	
KS 3 (pin22)	Tune-UP Disk-Up	Tune-Down Disk-Down	Seek-Up Scan-Up	Seek-Down Scan-Down Clock

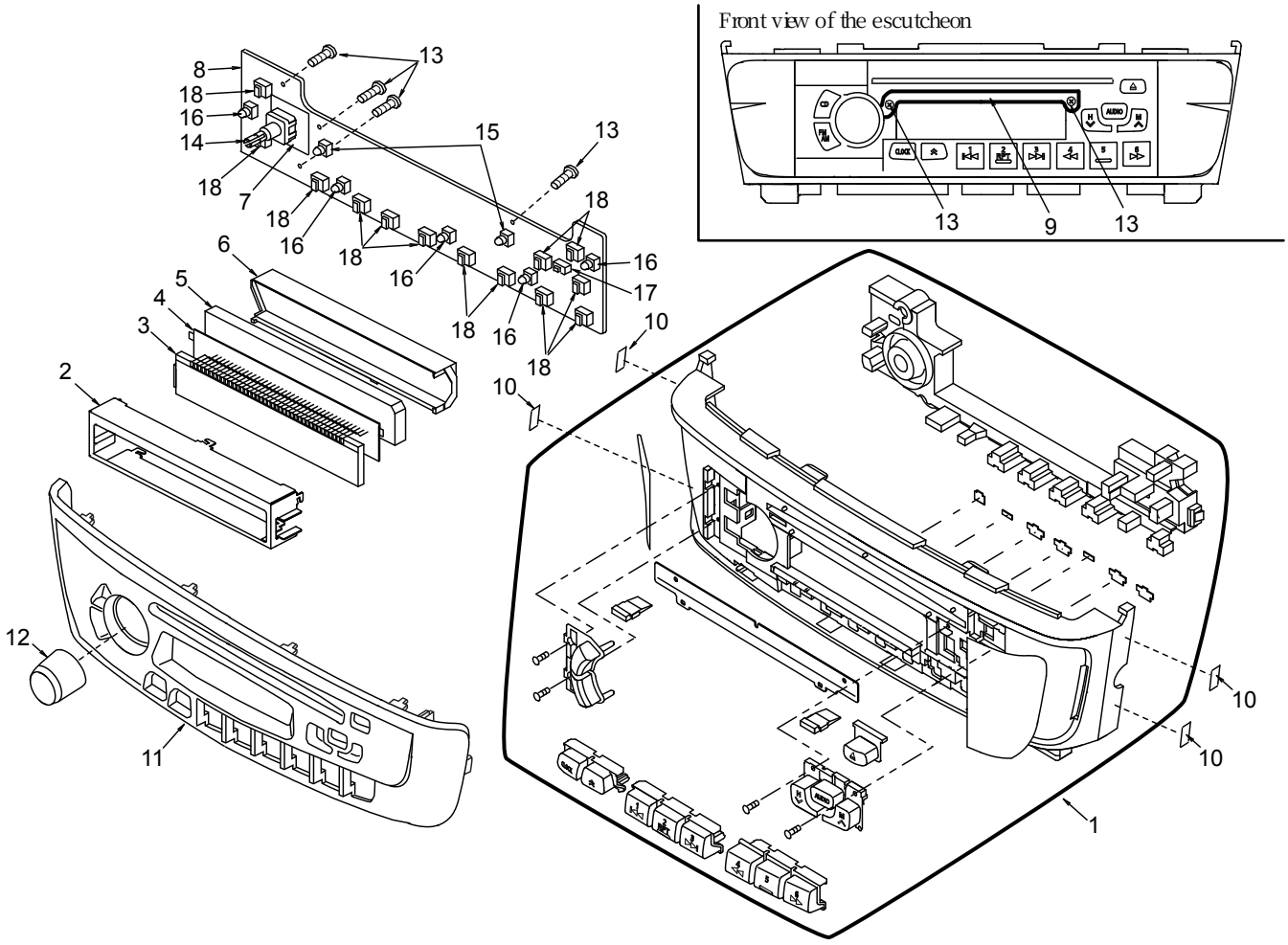
■BLOCK DIAGRAM



■ EXPLODED VIEW • PARTS LIST

Main section





NO.	PART NO.	DESCRIPTION	Q'TY
1	940-7894-60 940-7894-61 940-7894-62	ESCUTCHEON ASSY(CY018) ESCUTCHEON ASSY(CY038) ESCUTCHEON ASSY(CY068)	1
2	331-2448-00	LCD HOLDER	1
3	379-1161-20	INDICATOR	1
4	335-5779-00	COLOR FILTER	1
5	335-5777-00	LCD ILLUMI	1
6	335-5778-00	ILLUMI HOLDER	1
7	347-6178-00	COLOR FILTER	1
8	039-1502-00	SWITCH PWB (WITHOUT COMPONENT)	1
9	335-6197-00	SPACER	1
10	347-2510-00	CUSHION TAPE	4
11	373-0889-83 373-0889-84 373-0889-85	DIAL COVER(CY018) DIAL COVER(CY038) DIAL COVER(CY068)	1
12	380-5433-00	KNOB	1
13	716-0872-00	PAD SCREW(M1.7×5)	6
14	016-0010-15	VARIABLE RESISTOR	1
15	017-0447-09	PILOT LAMP(8V105mA)	2
16	017-0433-08	PILOT LAMP(14V40m)	5
17	013-6302-50	SWITCH	1
18	013-6300-51	SWITCH	13
19	039-1463-00	SUB PWB (WITHOUT COMPONENT)	1
20	331-2449-00	CONNECTOR HOLDER	1
21	074-1185-10	OUTLET SOCKET(NS10/6MW)	1

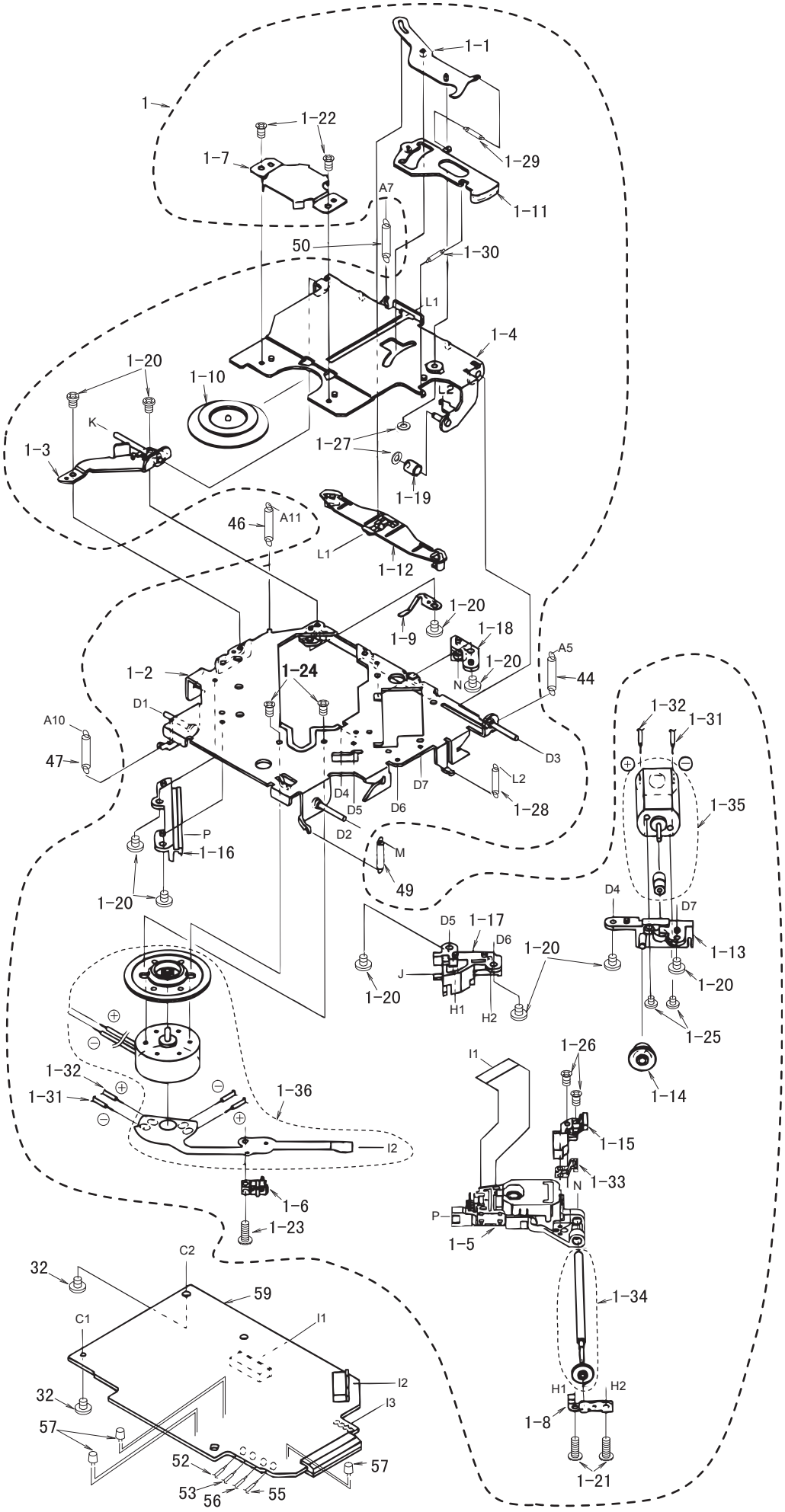
NO.	PART NO.	DESCRIPTION	Q'TY
22	013-1501-00	MAIN PWB (WITHOUT COMPONENT)	1
23	880-1914B	AM/FM TUNER PACK	1
24	092-0702-00	ANT RECEPT	1
25	305-0272-00	SIDE PLATE(L)	1
26	305-0273-00	SIDE PLATE(R)	1
27	307-0613-00	REAR COVER	1
28	313-1739-00	HEAT SINK	1
29	714-2605-81	MACHINE SCREW(M2.6×5)	11
30	714-2612-81	MACHINE SCREW(M2.6×12)	6
31	800-0205-00	WIRE	1
32	286-9269-00 286-9269-01 286-9269-02	SETPLATE(CY018) SETPLATE(CY038) SETPLATE(CY068)	1
33	303-0471-00	UPPER COVER	1
34	304-0459-00	LOWER COVER	1
35	331-2450-00	MECH BRACKET(FRONT)	1
36	331-2451-00	MECH BRACKET(REAR)	1
37	331-2452-00	ESCUTCHEON BRACKET	2
38	702-3008-81	TAP SCREW	2
39	714-2303-81	MACHINE SCREW(M2.3×3)	8
40	347-2022-01	PAPER PART	1
41	716-1494-00	IT SCREW(M2.6×6)	4
42	816-2490-00	FLAT WIRE	1
43	929-0069-87	CD MECHANISM	1

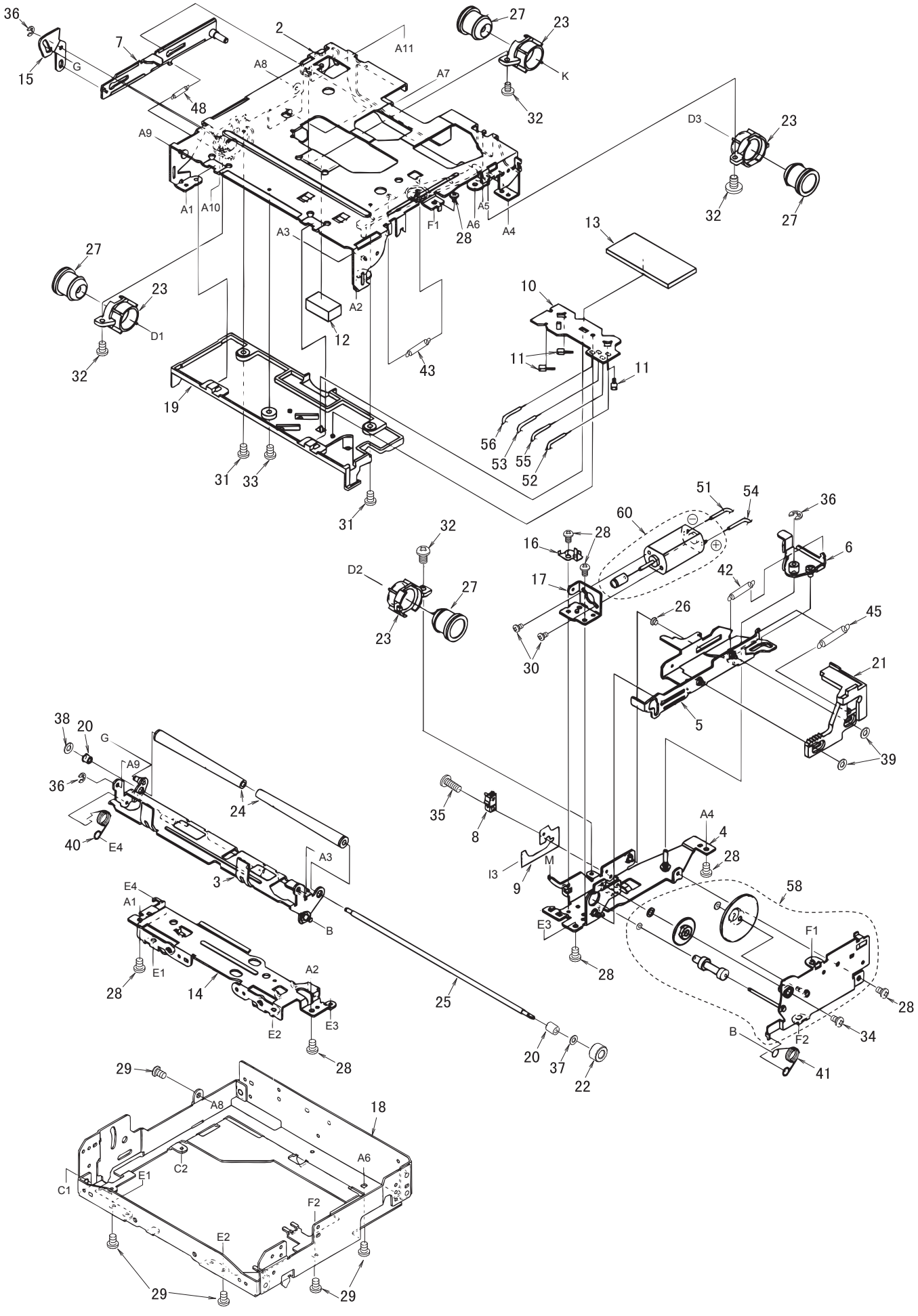
CD mechanism section : 929-0069-87

NO.	PART NO.	DESCRIPTION	Q'TY
1	HBS-463-100	DRIVE UNIT	1
1-1	966-0314-40	STOP LINK-ASSY	1
1-2	966-0447-40	DR-PLATE-ASSY	1
1-3	966-0448-40	SIDE PLATE-ASSY	1
1-4	966-0449-40	CLAMP-LINK-ASSY	1
1-5	969-0050-51 969-0050-03	PICK UP UNIT	1
1-6	013-7100-00	LIMIT SWITCH	1
1-7	620-0198-03	CLAMPER PLATE	1
1-8	620-0491-03	SPRING PLATE	1
1-9	620-0690-01	RATTLE PLATE	1
1-10	621-0205-02	CLAMPER RING	1
1-11	621-0251-03	LOCK LINK	1
1-12	621-0252-03	DISC STOPPER	1
1-13	621-0253-02	MOTOR HOLDER	1
1-14	621-0255-02	SECOUND GEAR	1
1-15	621-0375-00	SH-BASE	1
1-16	621-0357-03	PICK UP GUIDE	1
1-17	621-0358-02	LS-HOLDER-F	1
1-18	621-0359-02	LS-HOLDER-R	1
1-19	622-1073-02	CLAMPER ROLLER	1
1-20	714-2003-81	MACHINE SCREW(M2X3)	10
1-21	716-0675-00	SCREW(M2X5.5)	2
1-22	716-1468-00	SCREW(M2X2.5)	2
1-23	716-1555-00	WAVE SCREW(M2X5)	1
1-24	716-1733-00	SCREW(M1.7X2.3)	2
1-25	732-2004-11	SEMS SCREW	2
1-26	739-1735-17	PRECISION SCREW	2
1-27	746-0761-00	SCREW	2
1-28	750-3097-03	CLAMPER SPRING	1
1-29	750-3098-00	L-LINK SPRING	1
1-30	750-3099-00	ES-SPRING	1
1-31	816-2372-00	LEAD(BLUE)	1
1-32	816-2373-00	LEAD(WHITE)	1
1-33	966-0454-00	SH-RACK-ASSY	1
1-34	HBS-432-100	LS-GEAR-ASSY	1
1-35	SMA-146-100	SLED MOTOR-ASSY	1
1-36	SMA-151-100	SPINDLE MOTOR-ASSY	1
2	966-0308-40	CHASSIS-ASSY	1
3	966-0309-22	L-DISC-G-ASSY	1
4	966-0310-40	SFT-P-CH-ASSY	1
5	966-0312-40	SHIFT-P-ASSY	1
6	966-0358-40	DRIVE-L-PL-ASSY	1
7	966-0359-40	SIDE-L-PL-ASSY	1
8	013-3879-01	CHUCKING SWITCH	1
9	039-0586-01	CHUCKING SWITCH PWB (WITHOUT COMPONENT)	1
10	039-0588-01	SENSOR PWB (WITHOUT COMPONENT)	1
11	060-0252-01	PHOTO-TR (PT4850F)	3
12	345-7513-01	CLAMPER SHEET	1

NO.	PART NO.	DESCRIPTION	Q'TY
13	345-7514-00	S-PWB-SHEET	1
14	620-0485-04	FRONT PLATE	1
15	620-0488-01	S-L-LINK PLATE	1
16	620-0489-02	MOTOR PLATE	1
17	620-0492-01	MOTOR BRACKET	1
18	620-0773-01	MECH-BRACKET	1
19	621-0402-01	U-DISC GUIDE-F	1
20	621-0243-02	ROLLER SLEEVE	2
21	621-0248-07	RACK GEAR	1
22	621-0249-02	ROLLER GEAR	1
23	621-0250-01	DAMPER HOLDER	4
24	621-0258-03	LOADING ROLLER	2
25	622-1072-05	ROLLER SHAFT	1
26	622-1219-01	SHIFT ROLLER	1
27	629-0058-00	DAMPER-VA	4
28	714-2003-81	MACHINE SCREW(M2X3)	8
29	714-2603-81	MACHINE SCREW(M2.6X3)	5
30	716-1468-00	SCREW(M2X2.5)	2
31	716-1507-00	SCREW(M2X3)	2
32	716-1670-00	SCREW(M2X4)	6
33	716-1677-00	SCREW(M2X5)	1
34	716-1704-00	SCREW(M2X7)	1
35	716-1742-00	SCREW(M2X5)	1
36	743-1500-10	E-RING	3
37	746-0712-03	WASHER	1
38	746-0762-00	WASHER	1
39	746-0877-02	WASHER	2
40	750-3090-02	RO-SPRING-L	1
41	750-3091-03	RO-SPRING-R	1
42	750-3092-03	SHIFT SPRING	1
43	750-3094-00	S-ARM SPRING	1
44	750-3096-01	DR-SPRING-R	1
45	750-3098-00	L-LINK SPRING	1
46	750-3164-00	DR-SPRING-LR	1
47	750-3188-00	DR-SPRING-F-B	1
48	750-3189-00	SIDE-L-SPRING	1
49	750-3201-00	DR-SPRING-F-R	1
50	750-3202-00	CENTER SPRING-B	1
51	800-4904-60	VINYL-COAT-WIRE(BLK)	1
52	800-4910-60	VINYL-COAT-WIRE(BLK)	1
53	801-4910-60	VINYL-COAT-WIRE(BRN)	1
54	802-4904-60	VINYL-COAT-WIRE(RED)	1
55	802-4910-60	VINYL-COAT-WIRE(RED)	1
56	804-4910-60	VINYL-COAT-WIRE(YEL)	1
57	001-0563-00	DIODE	3
58	HBS-430-100	GEAR-PLATE-ASSY	1
59	039-1088-03	MECHANISM PWB (WITHOUT COMPONENT)	1
60	SMA-147-100	LOADING MOTOR-ASSY	1

CD mechanism section : 929-0069-87

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PN-2165M

■ELECTRICAL PARTS LIST

Main PWB section(B1)

Note) Several different parts of the same reference number are alternative parts.
One of those parts is used in the set.

REF No.	PART No.	DESCRIPTION
ANT101	092-0702-00	ANT RECEPT
BL101	880-1914B	AM-FM-TUNER
C108	176-1501-00	15pF CH
C109	043-0277-01	0.022μF
C110	176-1021-00	1000pF CH
C111	183-1073-22	10V100μF
C112	042-0458-00	50V1μF
C113	183-1073-22	10V100μF
C115	042-0562-36	50V1μF
C116	178-1232-78	0.012μF
C140	172-2231-11	0.022μF
C141	183-4763-32	16V47μF
C143	117-0000-00	1/10W 0Ω JW
C144	176-1007-00	10pF CH
C145	178-3932-78	0.039μF
C146	178-3932-78	0.039μF
C153	183-1073-22	10V100μF
C154	178-1042-78	0.1μF
C156	176-1007-00	10pF CH
C157	178-2232-78	0.022μF
C158	176-1011-00	100pF CH
C159	176-1007-00	10pF CH
C201	042-0562-17	16V10μF
C202	183-1043-62	50V0.1μF
C203	183-1043-62	50V0.1μF
C204	042-0562-17	16V10μF
C205	042-0562-17	16V10μF
C206	042-0562-17	16V10μF
C207	178-1842-78	0.18μF
C208	183-3353-62	50V3.3μF
C209	183-3353-62	50V3.3μF
C210	042-0505-04	10V33μF
C211	178-1842-78	0.18μF
C212	042-0562-36	50V1μF
C213	042-0562-36	50V1μF
C214	042-0562-17	16V10μF
C215	042-0562-17	16V10μF
C216	042-0562-17	16V10μF
C217	042-0562-17	16V10μF
C218	042-0562-36	50V1μF
C219	042-0562-36	50V1μF
C220	178-1242-78	0.12μF
C221	178-1242-78	0.12μF
C222	178-1532-78	0.015μF
C223	178-1532-78	0.015μF
C224	178-3312-78	330pF
C225	178-3312-78	330pF
C226	042-0562-17	16V10μF
C227	042-0562-17	16V10μF
C228	178-3332-78	0.033μF
C229	042-0505-04	10V33μF
C301	176-1011-00	100pF CH
C302	176-1011-00	100pF CH
C303	176-1011-00	100pF CH
C304	176-1011-00	100pF CH
C306	176-2201-00	22pF CH
C307	183-1053-61	50V1μF
C308	178-3922-78	3900pF
C309	178-3922-78	3900pF
C310	178-4742-78	0.47μF
C401	183-4763-11	6.3V47μF
C402	178-1042-78	0.1μF
C403	183-1063-32	16V10μF
C404	042-0417-00	10V47μF
C405	183-1073-22	10V100μF
C406	183-1063-32	16V10μF
C407	183-1063-32	16V10μF
C408	183-4763-12	6.3V47μF
C409	178-1042-78	0.1μF
C410	184-4773-22	10V470μF
C411	183-4756-51	35V4.7μF NP
C413	178-1042-78	0.1μF
C414	178-1042-78	0.1μF
C416	183-4763-11	6.3V47μF
C417	178-1042-78	0.1μF
C418	178-1042-78	0.1μF
C420	042-0505-81	10V22μF
C421	172-1041-11	0.1μF
C423	183-4763-32	16V47μF
C424	042-0505-81	10V22μF
C503	042-0562-20	16V47μF
C504	183-1053-62	50V1μF
C505	042-0465-00	16V3300μF
C506	172-1041-11	0.1μF
C507	183-1063-32	16V10μF
C509	176-1011-00	100pF CH
C510	176-4711-00	470pF CH
C601	042-0562-17	16V10μF
C602	042-0562-17	16V10μF
C603	042-0562-17	16V10μF
C604	042-0562-17	16V10μF
C606	176-1021-00	1000pF CH
C607	176-1021-00	1000pF CH
C609	176-2201-00	22pF CH
C610	176-2201-00	22pF CH
C611	176-2201-00	22pF CH
C612	176-2201-00	22pF CH
C613	043-0322-02	16V 0.15μF
C614	043-0322-51	0.12μF
C615	043-0322-51	0.12μF
C616	043-0322-02	16V 0.15μF
C617	043-0322-51	0.12μF
C618	043-0322-00	16V 0.1μF
C619	043-0322-00	16V 0.1μF
C620	043-0322-51	0.12μF
C621	043-0238-01	0.033μF
C622	043-0322-07	16V 0.027μF
C623	043-0322-07	16V 0.027μF
C624	043-0238-01	0.033μF
C625	043-0238-01	0.033μF
C626	043-0322-07	16V 0.027μF
C627	043-0322-07	16V 0.027μF
C628	043-0238-01	0.033μF
C629	178-1032-78	0.01μF
C630	178-2232-78	0.022μF
C631	043-0238-02	0.047μF
C632	043-0238-02	0.047μF
C633	117-0000-00	1/10W 0Ω JW
C634	117-0000-00	1/10W 0Ω JW
C636	043-0238-02	0.047μF
C637	117-0000-00	1/10W 0Ω JW
C638	042-0505-03	16V2.2μF
C639	043-0322-51	0.12μF
C640	043-0322-51	0.12μF
C641	043-0322-51	0.12μF
C642	043-0238-02	0.047μF
C643	117-0000-00	1/10W 0Ω JW
C644	043-0322-51	0.12μF
C646	172-1041-11	0.1μF
C647	183-1053-62	50V1μF
C648	178-2222-05	2200pF
C649	178-2222-05	2200pF
C650	178-2222-05	2200pF
C651	178-2222-05	2200pF
C652	178-2222-05	2200pF
C653	178-2222-05	2200pF
C654	178-2222-05	2200pF
C655	178-2222-05	2200pF
C656	178-2222-05	2200pF
C657	178-2222-05	2200pF
C662	042-0417-00	10V220μF
C663	042-0562-20	16V47μF
C686	178-1032-78	0.01μF
C687	176-2201-00	22pF CH
C688	176-2201-00	22pF CH
C689	176-2201-00	22pF CH
C690	176-2201-00	22pF CH
C691	176-2201-00	22pF CH
C692	176-2201-00	22pF CH
C693	176-2201-00	22pF CH
C694	176-2201-00	22pF CH
C695	176-2201-00	22pF CH
C696	176-2201-00	22pF CH
C697	176-2201-00	22pF CH
C698	176-2201-00	22pF CH
C699	176-2201-00	22pF CH
C700	176-2201-00	22pF CH
C701	176-2201-00	22pF CH
C702	176-2201-00	22pF CH
D301	001-0294-00	1SS133
D301	001-0330-00	1SS119
D401	001-0503-31	HZS6 A2L
D402	001-0377-48	MA4091H
D402	001-0376-49	MTZJ10A
D402	001-0400-48	HZS9.1JB3
D403	001-0294-00	1SS133
D403	001-0330-00	1SS119
D404	001-0503-45	HZS9B1L
D405	001-0503-31	HZS6 A2L
D406	001-0377-39	MA4068H
D406	001-0400-39	HZS6.8JB3
D406	001-0376-40	MTZJ7.5A
D407	001-0400-43	HZS8.2JB1
D407	001-0376-44	MTZJ8.2B
D407	001-0377-43	MA4082L
D410	001-0294-00	1SS133
D410	001-0330-00	1SS119
D503	001-0626-00	1A2
D503	001-0466-00	S5688B
D504	001-2015-00	RL253
D505	001-0626-00	1A2
D505	001-0466-00	S5688B
D506	001-0466-00	S5688B
D506	001-0626-00	1A2
D507	001-0377-34	MA4062L
D507	001-0400-34	HZS6C1
D507	001-0376-34	MTZJ6.2A
D508	001-0627-00	U1BC44
D509	001-0627-00	U1BC44
D510	001-0627-00	U1BC44
D511	001-0627-00	U1BC44
IC201	051-5012-00	LC75386
IC301	052-1160-00	LC72366-9531
IC601	051-3019-90	NJM2060V
IC602	051-3019-90	NJM2060V
IC603	051-3019-90	NJM2060V
IC604	051-2023-01	TA8260AH
IC605	051-3019-90	NJM2060V
IC606	051-3020-90	NJM4565V
J201	074-0850-08	8P DIN
J301	074-1186-26	26P
L102	010-2003-04	COIL
L401	010-2230-64	2.2μH
L501	009-0670-01	CHOKE
P501	076-0324-16	PLUG(16P)
P502	076-0540-12	PLUG(12P)
P503	076-0540-10	PLUG(10P)
Q103	108-0669-00	2SK669
Q106	100-1150-00	2SA1150
Q107	100-1150-00	2SA1150
Q109	125-2031-02	MUN2211
Q109	125-2005-01	UN2211
Q109	125-2004-02	RN1402

REF No.	PART No.	DESCRIPTION
Q109	125-2020-02	DTC114EK
Q201	125-2004-02	RN1402
Q201	125-2031-02	MUN2211
Q201	125-2005-01	UN2211
Q201	125-2020-02	DTC114EK
Q203	125-9002-02	RN4602
Q203	125-9003-02	IMD3
Q301	125-0014-02	DTA114EK
Q301	125-0002-02	RN2402
Q301	125-0024-02	MUN2111
Q301	125-0001-01	UN2111
Q401	103-2118-00	2SD2118
Q402	103-2118-00	2SD2118
Q405	100-1428-00	2SA1428
Q406	125-2020-02	DTC114EK
Q406	125-2031-02	MUN2211
Q406	125-2004-02	RN1402
Q406	125-2005-01	UN2211
Q407	100-1048-00	2SA1048
Q407	100-1175-00	2SA1175
Q409	102-3420-00	2SC3420
Q410	103-1858-00	2SD1858
Q411	125-9003-02	IMD3
Q411	125-9002-02	RN4602
Q412	102-2412-00	2SC2412
Q412	102-2712-00	2SC2712
Q412	103-0601-00	2SD601A
Q414	125-2005-01	UN2211
Q414	125-2031-02	MUN2211
Q414	125-2020-02	DTC114EK
Q414	125-2004-02	RN1402
Q417	103-2118-00	2SD2118
Q419	103-1306-00	2SD1306
Q420	102-2412-00	2SC2412
Q420	102-2712-00	2SC2712
Q420	103-0601-00	2SD601A
Q421	125-9003-02	IMD3
Q421	125-9002-02	RN4602
Q422	125-0014-02	DTA114EK
Q422	125-0001-01	UN2111
Q422	125-0002-02	RN2402
Q422	125-0024-02	MUN2111
Q423	125-2005-01	UN2211
Q423	125-2020-02	DTC114EK
Q423	125-2031-02	MUN2211
Q423	125-2004-02	RN1402
Q503	102-2412-00	2SC2412
Q503	102-2712-00	2SC2712
Q503	103-0601-00	2SD601A
R2	117-0000-00	1/10W 0Ω JW
R110	117-2221-10	1/10W 2.2kΩ
R111	117-2221-10	1/10W 2.2kΩ
R112	117-3321-10	1/10W 3.3kΩ
R113	117-4721-10	1/10W 4.7kΩ
R115	111-2221-91	1/4WS 2.2kΩ
R116	117-1021-10	1/10W 1kΩ
R118	111-1031-91	1/4WS 10kΩ
R120	111-1031-91	1/4WS 10kΩ
R121	111-2221-91	1/4WS 2.2kΩ
R132	117-2221-10	1/10W 2.2kΩ
R133	111-5691-91	1/4WS 5.6Ω
R134	117-4741-10	1/10W 470kΩ
R135	111-1001-91	1/4WS 10Ω
R136	111-8291-91	1/4WS 8.2Ω
R138	117-1011-10	1/10W 100Ω
R139	117-8201-10	1/10W 82Ω
R201	117-3011-10	1/10W 300Ω
R202	117-4731-10	1/10W 47kΩ
R203	117-3931-10	1/10W 39kΩ
R204	117-4731-10	1/10W 47kΩ
R205	111-8211-91	1/4WS 820Ω
R206	117-3011-10	1/10W 300Ω
R207	117-0000-00	1/10W 0Ω JW

REF No.	PART No.	DESCRIPTION
R208	117-0000-00	1/10W 0Ω JW
R209	117-4721-10	1/10W 4.7kΩ
R210	117-4721-10	1/10W 4.7kΩ
R213	117-4741-10	1/10W 470kΩ
R215	111-8211-91	1/4WS 820Ω
R216	032-0106-63	1/10W 47kΩ±0.5%
R217	032-0106-63	1/10W 47kΩ±0.5%
R218	032-0106-63	1/10W 47kΩ±0.5%
R219	032-0106-63	1/10W 47kΩ±0.5%
R220	117-4731-10	1/10W 47kΩ
R221	117-3931-10	1/10W 39kΩ
R301	117-2231-10	1/10W 22kΩ
R302	117-4731-10	1/10W 47kΩ
R303	117-1031-10	1/10W 10kΩ
R304	117-1031-10	1/10W 10kΩ
R305	117-4731-10	1/10W 47kΩ
R306	117-1041-10	1/10W 100kΩ
R307	117-1041-10	1/10W 100kΩ
R308	117-1041-10	1/10W 100kΩ
R309	117-4731-10	1/10W 47kΩ
R310	117-1031-10	1/10W 10kΩ
R311	117-1031-10	1/10W 10kΩ
R312	117-4731-10	1/10W 47kΩ
R313	117-4731-10	1/10W 47kΩ
R315	117-4731-10	1/10W 47kΩ
R316	117-6841-10	1/10W 680kΩ
R317	117-1021-10	1/10W 1kΩ
R318	117-1021-10	1/10W 1kΩ
R319	117-1031-10	1/10W 10kΩ
R320	117-1031-10	1/10W 10kΩ
R321	117-1031-10	1/10W 10kΩ
R323	119-1021-10	1/16W 1kΩ
R324	119-1021-10	1/16W 1kΩ
R325	119-1021-10	1/16W 1kΩ
R326	119-1021-10	1/16W 1kΩ
R327	119-1021-10	1/16W 1kΩ
R328	119-1021-10	1/16W 1kΩ
R405	111-2211-91	1/4WS 220Ω
R406	111-4711-91	1/4WS 470Ω
R407	117-1041-10	1/10W 100kΩ
R408	111-1021-91	1/4WS 1kΩ
R409	117-3321-10	1/10W 3.3kΩ
R410	117-2231-10	1/10W 22kΩ
R411	117-1031-10	1/10W 10kΩ
R414	111-3911-91	1/4WS 390Ω
R415	117-1041-10	1/10W 100kΩ
R416	117-6821-10	1/10W 6.8kΩ
R417	117-2231-10	1/10W 22kΩ
R418	111-2021-91	1/4WS 2kΩJ
R419	117-1031-10	1/10W 10kΩ
R420	111-4731-91	1/4WS 47kΩ
R427	111-8211-91	1/4WS 820Ω
R428	111-8211-91	1/4WS 820Ω
R429	111-8211-91	1/4WS 820Ω
R430	117-5611-10	1/10W 560Ω
R432	111-1831-91	1/4WS 18kΩ
R433	111-4721-91	1/4WS 4.7kΩ
R434	111-2021-91	1/4WS 2kΩJ
R435	111-8211-91	1/4WS 820Ω
R438	117-4741-10	1/10W 470kΩ
R439	111-2291-91	1/4WS 2.2Ω
R502	117-4731-10	1/10W 47kΩ
R505	117-8221-10	1/10W 8.2kΩ
R506	117-4731-10	1/10W 47kΩ
R507	117-1031-10	1/10W 10kΩ
R508	111-1531-91	1/4WS 15kΩ
R509	114-2291-11	1W 2.2Ω
R510	117-5611-10	1/10W 560Ω
R511	117-1021-10	1/10W 1kΩ
R601	117-1031-10	1/10W 10kΩ
R602	117-1031-10	1/10W 10kΩ
R603	117-1031-10	1/10W 10kΩ
R604	117-1031-10	1/10W 10kΩ

REF No.	PART No.	DESCRIPTION
R606	117-0000-00	1/10W 0Ω JW
R607	117-0000-00	1/10W 0Ω JW
R609	117-1031-10	1/10W 10kΩ
R610	117-1031-10	1/10W 10kΩ
R611	117-4721-10	1/10W 4.7kΩ
R612	117-4721-10	1/10W 4.7kΩ
R613	117-4721-10	1/10W 4.7kΩ
R614	117-4721-10	1/10W 4.7kΩ
R615	117-1031-10	1/10W 10kΩ
R616	117-1031-10	1/10W 10kΩ
R617	032-0140-53	1/16W 2.2kΩ±1%
R618	032-0140-53	1/16W 2.2kΩ±1%
R619	032-0140-53	1/16W 2.2kΩ±1%
R620	032-0140-53	1/16W 2.2kΩ±1%
R621	032-0092-73	1/10W 3.9kΩ±1%
R622	032-0092-20	1/10W 2.7kΩ±1%
R623	032-0092-20	1/10W 2.7kΩ±1%
R624	032-0092-73	1/10W 3.9kΩ±1%
R625	032-0092-30	1/10W 150Ω±1%
R626	032-0092-30	1/10W 150Ω±1%
R627	032-0092-30	1/10W 150Ω±1%
R628	032-0092-30	1/10W 150Ω±1%
R629	032-0092-31	1/10W 150kΩ±1%
R630	032-0092-31	1/10W 150kΩ±1%
R631	032-0092-31	1/10W 150kΩ±1%
R632	032-0092-31	1/10W 150kΩ±1%
R633	032-0092-31	1/10W 150kΩ±1%
R634	032-0092-31	1/10W 150kΩ±1%
R635	032-0092-31	1/10W 150kΩ±1%
R636	032-0092-31	1/10W 150kΩ±1%
R637	032-0092-30	1/10W 150Ω±1%
R638	032-0092-30	1/10W 150Ω±1%
R639	032-0092-30	1/10W 150Ω±1%
R640	032-0092-30	1/10W 150Ω±1%
R641	032-0092-42	1/10W 1.6kΩ±1%
R642	032-0092-39	1/10W 5.1kΩ±1%
R643	032-0092-39	1/10W 5.1kΩ±1%
R644	032-0092-42	1/10W 1.6kΩ±1%
R645	117-1831-10	1/10W 18kΩ
R646	117-4721-10	1/10W 4.7kΩ
R647	117-1021-10	1/10W 1kΩ
R650	032-0092-23	1/10W 18kΩ±1%
R652	032-0092-22	1/10W 1.2kΩ±1%
R653	032-0092-10	1/10W 7.5kΩ±1%
R654	032-0092-90	1/10W 10kΩ±1%
R655	032-0092-90	1/10W 10kΩ±1%
R656	032-0092-26	1/10W 51kΩ±1%
R657	032-0092-26	1/10W 51kΩ±1%
R658	111-1031-91	1/4WS 10kΩ
R659	111-1031-91	1/4WS 10kΩ
R660	032-0092-26	1/10W 51kΩ±1%
R661	032-0092-26	1/10W 51kΩ±1%
R662	032-0092-90	1/10W 10kΩ±1%
R663	032-0092-90	1/10W 10kΩ±1%
R664	111-1031-91	1/4WS 10kΩ
R665	032-0092-22	1/10W 1.2kΩ±1%
R666	032-0092-10	1/10W 7.5kΩ±1%
R667	111-1031-91	1/4WS 10kΩ
R668	032-0092-23	1/10W 18kΩ±1%
R670	117-2221-10	1/10W 2.2kΩ
R682	117-2231-10	1/10W 22kΩ
R683	117-8221-10	1/10W 8.2kΩ
R684	117-2231-10	1/10W 22kΩ
R685	117-8221-10	1/10W 8.2kΩ
R686	032-0092-90	1/10W 10kΩ±1%
R687	032-0092-90	1/10W 10kΩ±1%
R688	032-0092-90	1/10W 10kΩ±1%
R689	032-0092-90	1/10W 10kΩ±1%
SUP101	060-0122-20	DSP-141N-S00B
TC301	004-1580-64	47pF
X301	061-1053-00	4.5MHz

Sub PWB section(B2)

REF No.	PART No.	DESCRIPTION
J701	074-1185-10	NS10/NS06MW
P701	076-0324-16	PLUG(16P)

Switch PWB section(B3)

REF No.	PART No.	DESCRIPTION
C901	178-6812-78	680pF
C902	042-0423-02	6.3V4.7μF
C903	042-0423-02	6.3V4.7μF
IC901	051-6005-10	LC75822W
J901	074-1151-10	10P
J902	074-1151-12	12P
LCD901	379-1161-20	INDICATOR
PL916	017-0447-09	8V105mA
PL917	017-0447-09	8V105mA
PL918	017-0433-08	14V40mA
PL919	017-0433-08	14V40mA
PL920	017-0433-08	14V40mA
PL921	017-0433-08	14V40mA
PL922	017-0433-08	14V40mA
R901	117-5131-10	1/10W 51kΩ
R902	117-4741-10	1/10W 470kΩ
R903	117-1021-10	1/10W 1kΩ
S901	013-6300-51	SJPGAA032A
S902	013-6300-51	SJPGAA032A
S903	013-6300-51	SJPGAA032A
S904	013-6300-51	SJPGAA032A
S905	013-6300-51	SJPGAA032A
S906	013-6300-51	SJPGAA032A
S907	013-6300-51	SJPGAA032A
S908	013-6300-51	SJPGAA032A
S909	013-6300-51	SJPGAA032A
S910	013-6300-51	SJPGAA032A
S911	013-6300-51	SJPGAA032A
S912	013-6302-50	SKQMAL
S913	013-6300-51	SJPGAA032A
S914	013-6300-51	SJPGAA032A
VR901	016-0010-15	MAIN-VR

Mechanism PWB section(B4)

REF No.	PART No.	DESCRIPTION
C1	183-1073-12	6.3V100μF
C2	183-4763-11	6.3V47μF
C3	178-1042-78	0.1μF
C4	176-2201-00	22pF CH
C5	176-1801-00	18pF CH
C6	176-1801-00	18pF CH
C7	176-8201-00	82pF CH
C8	178-1042-78	0.1μF
C9	178-2242-78	0.22μF
C10	178-2242-78	0.22μF
C11	176-4701-00	47pF CH
C12	178-1532-78	0.015μF
C13	178-1032-78	0.01μF
C14	178-2722-78	2700pF
C15	178-4722-78	4700pF
C16	176-1201-00	12pF CH
C17	178-4712-78	470pF
C18	178-4712-78	470pF
C19	178-4732-78	0.047μF
C20	178-4732-78	0.047μF
C21	178-4732-78	0.047μF
C22	178-4732-78	0.047μF
C23	178-1032-78	0.01μF
C25	042-0505-01	10V22μF
C26	178-1042-78	0.1μF
C27	178-1042-78	0.1μF
C29	178-1042-78	0.1μF
C30	178-1042-78	0.1μF
C31	178-1032-78	0.01μF
C32	178-1032-78	0.01μF
C33	178-1042-78	0.1μF
C34	176-1501-00	15pF CH
C35	176-1501-00	15pF CH
C38	178-1022-78	1000pF
C39	178-1042-78	0.1μF
C40	178-1042-78	0.1μF
C41	183-1073-12	6.3V100μF
C43	183-1073-12	6.3V100μF
C44	183-4763-11	6.3V47μF
C45	183-1073-12	6.3V100μF
C46	178-1032-78	0.01μF
C47	178-1042-78	0.1μF
C48	178-1032-78	0.01μF
C49	176-6801-00	68pF CH
C51	178-1032-78	0.01μF
C52	178-1032-78	0.01μF
C54	183-4763-11	6.3V47μF
C55	178-1042-78	0.1μF
C56	178-1042-78	0.1μF
C58	178-1042-78	0.1μF
C59	178-2222-78	2200pF
D1	001-0563-00	GL380
D2	001-0563-00	GL380
D3	001-0563-00	GL380
D4	001-0330-00	1SS119
IC1	051-5704-00	TA2096FN
IC2	051-6342-00	TC9462F
IC3	051-6026-08	TA2058F
IC4	051-6027-00	BA6283N
J1	074-1138-17	SOCKET(17P)
J2	074-1143-06	SOCKET(6P)
L1	010-2155-03	10μH
L3	010-2199-74	10μH J
Q1	101-1237-50	2SB1237QR
Q2	102-2712-00	2SC2712
R1	117-1011-10	1/10W 100Ω
R2	117-1841-10	1/10W 180kΩ
R3	117-1841-10	1/10W 180kΩ
R4	117-2201-10	1/10W 22Ω
R5	117-8231-10	1/10W 82kΩ
R6	117-1041-10	1/10W 100kΩ
R7	117-1041-10	1/10W 100kΩ
R8	117-1031-10	1/10W 10kΩ
R9	117-2221-10	1/10W 2.2kΩ
R10	117-1031-10	1/10W 10kΩ
R12	117-1031-10	1/10W 10kΩ
R13	117-4731-10	1/10W 47kΩ
R15	117-4741-10	1/10W 470kΩ
R17	117-3331-10	1/10W 33kΩ
R18	117-3311-10	1/10W 330Ω
R19	117-3321-10	1/10W 3.3kΩ
R20	117-1031-10	1/10W 10kΩ
R21	117-3321-10	1/10W 3.3kΩ
R22	117-3321-10	1/10W 3.3kΩ
R23	117-3321-10	1/10W 3.3kΩ
R24	117-3321-10	1/10W 3.3kΩ
R26	117-1041-10	1/10W 100kΩ
R27	117-4711-10	1/10W 470Ω
R28	117-2211-10	1/10W 220Ω
R29	117-2211-10	1/10W 220Ω
R30	117-4721-10	1/10W 4.7kΩ
R34	111-2711-91	1/4WS 270Ω
R40	117-3321-10	1/10W 3.3kΩ
X1	061-3051-00	16.92MHz

Sensor PWB section(B5)

REF No.	PART No.	DESCRIPTION
Q 101	060-0252-01	PT4850F
Q 102	060-0252-01	PT4850F
Q 103	060-0252-01	PT4850F

Limit switch PWB section(B6)

REF No.	PART No.	DESCRIPTION
M 1	SMA-151-100	SPINDLE
M 2	SMA-146-100	SLED
S 1	013-7100-00	LIMIT

Chucking switch PWB section(B7)

REF No.	PART No.	DESCRIPTION
M 3	SMA-147-100	LOADING
S 2	013-3879-01	CHUCKING